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(54) **Packaging container for use in a microwave oven**

Verpackungsbehälter zur Verwendung in einem Mikrowellenofen

Emballage pour l'emploi dans un four à micro-ondes

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## Description

This invention relates to packaging containers which are of a type for use in connection with the cooking by microwave of foodstuffs held by the containers.

The invention has particular application to foodstuffs which are to be cooked in the packaging container by means of microwave energy. The foodstuffs in question are also of a nature in that they comprise a number of individual items such as chipped potatoes or products which are known as chicken nuggets or the like wherein in each packaging container there will be a number of the foodstuff items or perhaps a foodstuff which can be spread out such as mashed potato, as opposed for example to a single portion of foodstuffs such as a chicken burger which is of fixed dimension.

In the packaging and microwave cooking of these products a number of conflicting requirements arise. Firstly, it is desirable that the individual items should be packaged in the container in as small a volume as possible so that there will be maximum utilisation of space during transportation, storage and display on shelves. However, when it comes to the effective microwave cooking of these products, it is desirable that the products should be eased or shaken apart or spread out so as to allow the microwaves to pass between and over the products and effectively cook all of the products more evenly. One requirement therefore suggests small packaging, whilst the other requirement suggests that larger packaging is required.

In the case of many foodstuff products which are in a number of items or can be spread out, it is often the case that the user will remove the item/items from the packaging and cook it/them on a separate piece of domestic holloware such as plate or bowl, which can be inconvenient.

This is not normally possible where the products are of a nature requiring the application of a more intense radiation type heat to provide browning or crisping, especially in the case of chipped potatoes, because in such arrangement, the packaging is usually provided with a layer of a receptor or susceptor material which is of a nature which heats up intensely under the influence of the microwaves and provides almost a grilling or frying surface for the products. Examples of receptor material and receptor material packages are disclosed in United Kingdom Patent No 2 046 060.

It is known to provide packages for microwavable foodstuffs, for example as set forth in European Patent Application No. 0336325A3, wherein the product, such as a TV dinner, is cooked in the packaging in which the foodstuff is sold, but this packaging does not solve the problem of conflicting requirements described above as in this prior art the package remains closed during the cooking so that different parts of the packaging can apply different heating characteristics to different parts of the contents.

The present invention is concerned with providing packaging for use in connection with microwave cooking

of products of the nature described, whereby the afore-said disadvantages may be obviated or mitigated.

In accordance with the present invention there is provided a closed microwavable packaging and cooking container of cut and creased sheet material and containing foodstuff which is to be cooked in the container, and which rests on a base area of the container, said container being openable to a position in which it defines an extended base area which is surrounded by a wall and which overlaps, embraces or is separate from said first base area, characterised in that the closed condition of the container is the transportation storage and display condition and the open condition is the cooking condition, and said foodstuff is of a type which is packaged in as small a volume as possible, but requires to be eased or shaken apart or spread out for cooking and can be so eased or shaken apart or spread out over the extended base area when the container is moved to the open position.

Preferably, in a particular example, the extended base area is covered with microwave receptor or susceptor material. This susceptor or receptor material may lie between the product and a substrate forming part of the cut and creased sheet material of the container, or it may lie to the outside of such substrate as long as the receptor effect is applied from the receptor sheet material to the product.

Preferably, the packaging container in the closed condition is a rectilinear box of rectangular first base area. The extended base area may comprise the first base area plus the area of a wall portion which forms a side in the closed container, but which folds down to form part of the base in the opened container.

Alternatively, the extended base area may comprise a side panel which forms a side in the closed container, and a top of the container. In the latter case, the container when opened needs to be turned on its side so that the first base area for example lies vertically, and the extended base area can receive the product from the first base area. As the product is displaced from the first base area to the extended base area, the individual items can be spread apart to enhance microwave cooking.

Although it is preferred that in each of the above embodiments, the container in being moved between the closed and open positions ends up with the top of the container lying at right angles to the first base area, and walls on the top and base being continuous, in another arrangement, the container may be adapted to opened out so that the top and first base area lie in the same plane which would be horizontal in the cooking position, and the side wall arrangement would be such that in such opened out position, the side wall would be continuous around the container.

In yet another embodiment, the box is in two slidably interfitting parts which are closest together under storage or display conditions and are pulled apart in the extended base (or cooking) condition.

Specific forms of container according to or for use in the present invention will now be described, by way of

example, with reference to the accompanying drawings, wherein:-

Fig. 1 is a perspective view of a container for use in microwave cooking;

Fig. 2 shows the container of Fig. 1 in the opened condition;

Fig. 3 shows the container of Fig. 2 when positioned for microwave cooking of the container contents;

Fig. 4 shows a blank erectible into the container shown in Fig. 1;

Fig. 5 shows a container according to a further embodiment of the invention; and

Fig. 6 shows the container of Fig. 5 when in the open position.

Referring to the drawings, and firstly to Fig. 1 a rectilinear box container 10 of the configuration shown is manufactured from a cut and creased sheet material blank such as the blank shown in Fig. 4. The sheet material preferably will be cardboard, but other sheet materials can of course be used. The blank configuration may be any suitable and that given in Fig. 4 is only one example.

Reverting to Fig. 1, the container comprises a top 12, a base 14, front and rear walls 16, 18 and side walls 20 and 22.

The base 14 has a base area as indicated and referred to as the first base area, and the container is designed so that the top 12 can be opened as shown in Fig. 2.

As can be seen from Fig. 2, the top 12 is provided with a peripheral wall made up of a front wall section 24, side wall sections 26, 28 and glue flaps 30 and 32 which are hinged to section 24 but are glued to sections 26 and 28. When the container is in the position shown in Fig. 2, the top 12 is in the same plane as the rear panel 18 and the rear panel 18 and the top 12 form an extended base surface area which is greater than the surface area of base 14, and in the use of the package, when the container is in the opened position as shown in Fig. 2, it is turned on its side so that the extended base surface as shown in Fig. 3 becomes the actual base surface and the product is tipped from base 14 onto the extended base 12/18. This means that the product can be spread out and can be more effectively microwaved.

The cross hatching shown in Fig. 3 indicates that the extended base surface can if desired be provided overall with receptor material to enhance the microwave cooking. This would be particularly appropriate if the product were chipped potatoes.

Fig. 4 is included to show the basic blank which is used for constructing the package shown in Figs. 1, 2 and 3, and the blank comprises basically two major rec-

tangular panels 12 and 14 connected by the rear panel 18 and wall section 24 is hinged to panel 12, whilst front panel 16 is hinged to panel 14.

The side wall for the base panel 14 is made up of end flaps 30A, 32A provided with lock slots 34 and panel 16 is provided with end locking tabs 36 which engage as shown in Fig. 2 in the locking slots 34 in conventional manner.

Rear panel 18 is provided with similar locking tabs 38 which engage in the slots 34 as also shown in Fig. 2.

The wall portion 24 is shown as having the glue tabs 30 and 32 hinged thereto.

In Fig. 4 the convention adopted is that the full lines show the cut lines of the blank, whilst the double chain dotted lines show the fold lines.

Construction of the container from the blank shown in Fig. 4 will be readily understood by those skilled in the art.

In alternative forms of the invention, the extended base area comprises the area of base (14) plus the area of a wall portion which forms a side wall in the closed condition of the container; and the top (12) and base (14) lie in the same plane.

In the embodiment of the invention shown in Figs. 5 and 6, a box container 100 is made up of two interfitting parts 102 and 104. These parts can be slid open to the position shown in Fig. 6, and the extent to which they can be slid apart is limited by catch tabs 106 and 108 on the respective parts.

Each part is open at one side, and thus part 102 is open at the side indicated by reference 110, whilst part 104 is open at the side indicated by reference 112.

At the open side, on the top panel, the part 102 is cut-away as shown at 114, and similarly as shown at 116 the inner part 104 is cut away at the top of the open side.

The product obviously is contained within the container in the condition shown in Fig. 5, but when it is required to cook the product which may for example be chipped potatoes, the container is pulled apart to the position shown in Fig. 6 wherein the cut-away portions 114 and 116 overlap to provide a vent aperture 118, the base surface on which the product stands has been extended (approximately double) and if the product is chipped potatoes, the container in the open position in Fig. 6 can be shaken to distribute the chipped potatoes throughout the extended base region, and the container placed directly in a microwave oven for cooking.

The base of each of the parts 102 and 104 may be provided with receptor material.

The container may embody a sealing means which has to be broken to enable the container to be moved apart in order to prevent tampering, and any suitable blank construction may be adopted for the formation of the respective parts.

An extremely effective microwave cooking container results.

## Claims

1. A closed microwavable packaging and cooking container (10) of cut and creased sheet material and containing foodstuff which is to be cooked in the container, and which rests on a base area (14) of the container, said container being openable to a position in which it defines an extended base area (12, 18) which is surrounded by a wall (24, 32) and which overlaps, embraces or is separate from said first base area (14), characterised in that the closed condition of the container is the transportation storage and display condition and the open condition is the cooking condition, and said foodstuff is of a type which is packaged in as small a volume as possible, but requires to be eased or shaken apart or spread out for cooking and can be so eased or shaken apart or spread out over the extended base area (12, 18) when the container is moved to the open position. 5
2. A container according to claim 1, characterised in that the extended base area (12, 18) is covered with microwave receptor or susceptor material. 10
3. A container according to claim 2, characterised in that the receptor or susceptor material lies between the foodstuff and a substrate forming part of the cut and creased sheet material of the container. 15
4. A container according to claim 2, characterised in that the receptor or susceptor material lies to the outside of a substrate forming part of the cut and creased sheet material. 20
5. A container according to any preceding claim, characterized in that said container (10) in its closed condition is a rectilinear box of rectangular, first base area. 25
6. A container according to any preceding claim, characterised in that the extended base area (12, 18) comprises the first base area plus the area of a wall portion which forms a side in the closed container, but which folds down to form part of the base in the opened container. 30
7. A container according to any preceding claim, characterised in that the extended base area comprises a side panel (18) which forms a side in the closed container, and which together with a top (12) of the container forms said extended base area. 35
8. A container according to claim 7, characterised in that the container is opened up so that the top and first base area lie in the same plane. 40
9. A container according to claim 8, characterised in that the side wall is continuous around the container (10) in the opened position. 45

10. A container according to any of claims 1-5, characterised in that the container is in the form of a box consisting of two slidably interfitting parts (102, 104) which are closest together in the closed position and are pulled apart in the opened, extended base condition. 50

## Patentansprüche

1. Geschlossener, mikrowellen-tauglicher Verpackungs- und Kochbehälter (10) aus einem geschnittenen und gefalteten Flachmaterial, der ein Nahrungsmittel enthält, das in dem Behälter gekocht werden soll und auf einer Basisfläche (14) des Behälters ruht, wobei der Behälter in eine Stellung zu öffnen ist, in der er eine erweiterte Basisfläche (12, 18) bildet, die von einer Wand (24, 32) umgeben ist und die erste Basisfläche (14) überlappt, einschließt oder von ihr getrennt ist, dadurch gekennzeichnet, 55  
daß die geschlossene Form des Behälters die Transport-, Lager- und Ausstellungsform und die offene Form die Kochform ist und das Nahrungsmittel von der Art ist, die in einem möglichst kleinen Volumen verpackt ist, die zum Kochen aber gelockert, auseinandergeschüttelt oder ausgebreitet werden muß und die gelockert auseinandergeschüttelt oder über die erweiterte Basisfläche (12, 18) ausgebreitet werden kann, wenn der Behälter in die offene Stellung gebracht ist.
2. Behälter nach Anspruch 1, dadurch gekennzeichnet, daß die erweiterte Basisfläche ((12, 18) mit einem Mikrowellen aufnehmenden oder für Mikrowellen empfindlichen Material bedeckt ist.
3. Behälter nach Anspruch 2, dadurch gekennzeichnet, daß das Mikrowellen aufnehmende oder für Mikrowellen empfindliche Material zwischen dem Nahrungsmittel und einem eine Tragschicht bildenden Teil des geschnittenen und gefalteten Flachmaterials des Behälters liegt.
4. Behälter nach Anspruch 2, dadurch gekennzeichnet, daß das Mikrowellen aufnehmende oder für Mikrowellen empfindliche Material an der Außenseite des eine Tragschicht bildenden Teils des geschnittenen und gefalteten Flachmaterials liegt.
5. Behälter nach einen der vorausgehenden Ansprüche, dadurch gekennzeichnet, daß der Behälter (10) in seiner geschlossenen Stellung ein geradlinig begrenzter Kasten mit einer rechteckigen ersten Basisfläche ist.
6. Behälter nach einem der vorausgehenden Ansprüche, dadurch gekennzeichnet, daß die erweiterte Basisfläche (12, 18) die erste Basisfläche und zusätzlich die Fläche eines Wandteils umfaßt, der

beim geschlossenen Behälter eine Seite bildet, er aber nach unten klappbar ist, um einen Teil der Basisfläche des geöffneten Behälters zu bilden.

7. Behälter nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß die erweiterte Basisfläche eine Seitenwand (18) umfaßt, die eine Seite des geschlossenen Behälters bildet und die zusammen mit einem Deckel (12) des Behälters die erweiterte Basisfläche bildet. 5
8. Behälter nach Anspruch 7, dadurch gekennzeichnet, daß der Behälter so aufklappbar ist, daß der Deckel und die erste Basisfläche in derselben Ebene liegen. 10
9. Behälter nach Anspruch 8, dadurch gekennzeichnet, daß sich die Seitenwand in der geöffneten Stellung allseitig um den Behälter (10) erstreckt. 15
10. Behälter nach einem der Ansprüche 1 bis 5, dadurch gekennzeichnet, daß der Behälter die Form eines Kastens hat, der aus zwei ineinandersteckbaren Teilen (102, 104) besteht, die in der geschlossenen Stellung einander am nächsten sind und in der geöffneten Stellung mit erweiterter Basis auseinandergezogen sind. 20 25

#### Revendications

1. Récipient clos d'emballage et de cuisson (10) convenant aux fours à micro-ondes en feuille découpée et pliée, contenant un produit alimentaire à y cuire, qui repose sur une surface de base (14) du récipient, ledit récipient pouvant être ouvert dans une position où il définit une surface de base développée (12, 18) qui est entourée par une paroi (24, 32) et qui recouvre, encercle ou est séparée de ladite première surface de base (14), caractérisé en ce que l'état fermé du récipient est l'état de transport, de stockage et d'étalage, et l'état ouvert est l'état prévu pour la cuisson, et en ce que ledit produit alimentaire est d'un type qui est emballé dans un volume aussi petit que possible, mais demande à se détendre ou à être éparpillé ou étalé sur la surface de base développée (12, 18) quand on met le récipient en position ouverte. 30 35 40 45
2. Récipient suivant la revendication 1, caractérisé en ce que la surface de base développée (12, 18) est recouverte d'un matériau récepteur ou susceptible de micro-ondes. 50
3. Récipient suivant la revendication 2, caractérisé en ce que le matériau récepteur ou susceptible se trouve entre le produit alimentaire et un substrat qui fait partie de la matière en feuille découpée et pliée du récipient. 55

4. Récipient suivant la revendication 2, caractérisé en ce que le matériau récepteur ou susceptible se trouve à l'extérieur d'un substrat qui fait partie de la matière en feuille découpée et pliée.

5. Récipient suivant l'une des revendications précédentes, caractérisé en ce qu'à l'état fermé, ledit récipient (10) est une boîte rectiligne avec une première surface de base rectangulaire.

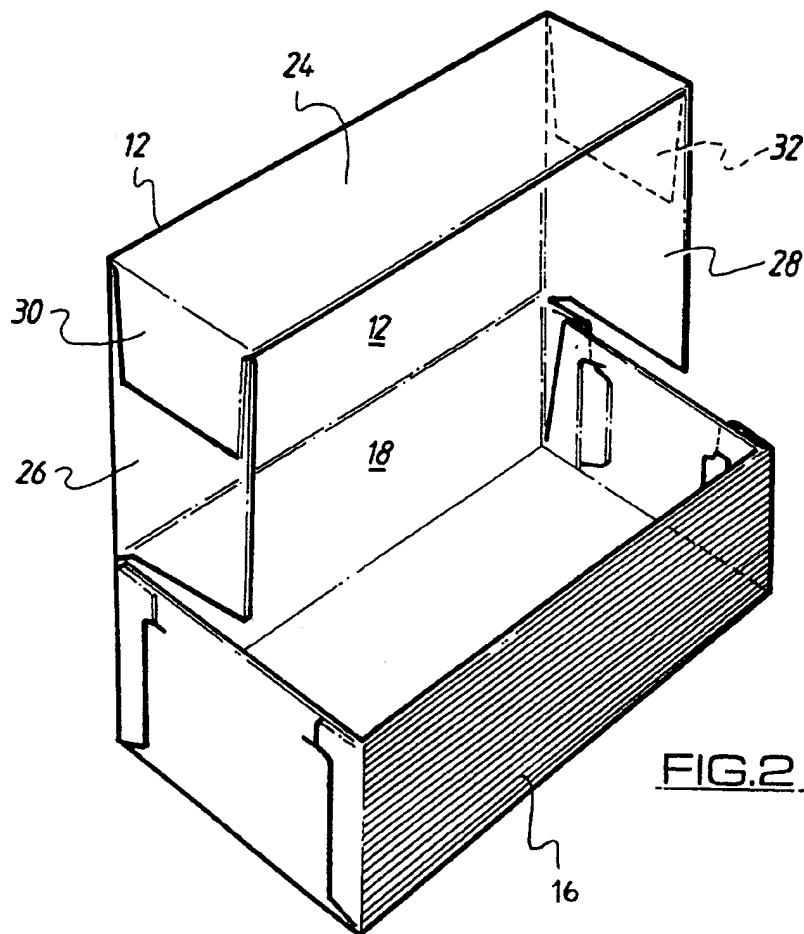
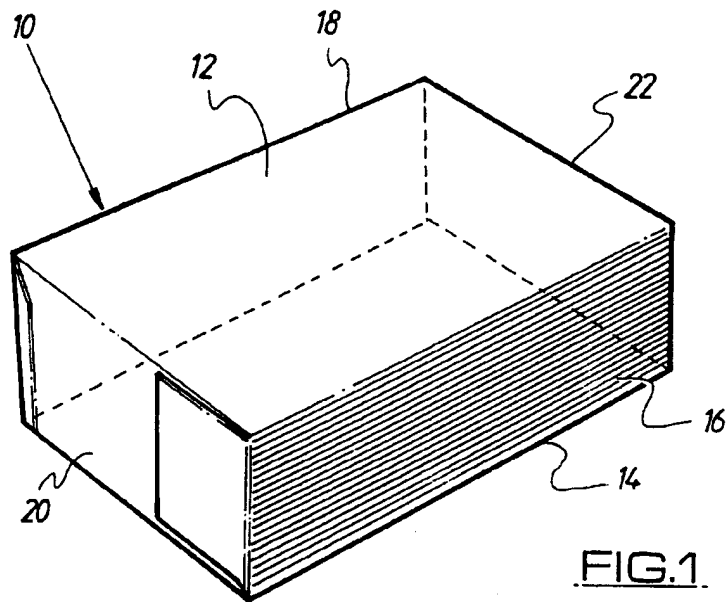
6. Récipient suivant l'une des revendications précédentes, caractérisé en ce que la surface de base développée (12, 18) comprend la première surface de base, plus la surface d'une partie de paroi qui forme un côté dans le récipient fermé, mais qui est rabattue vers le bas pour former une partie de la base dans le récipient ouvert.

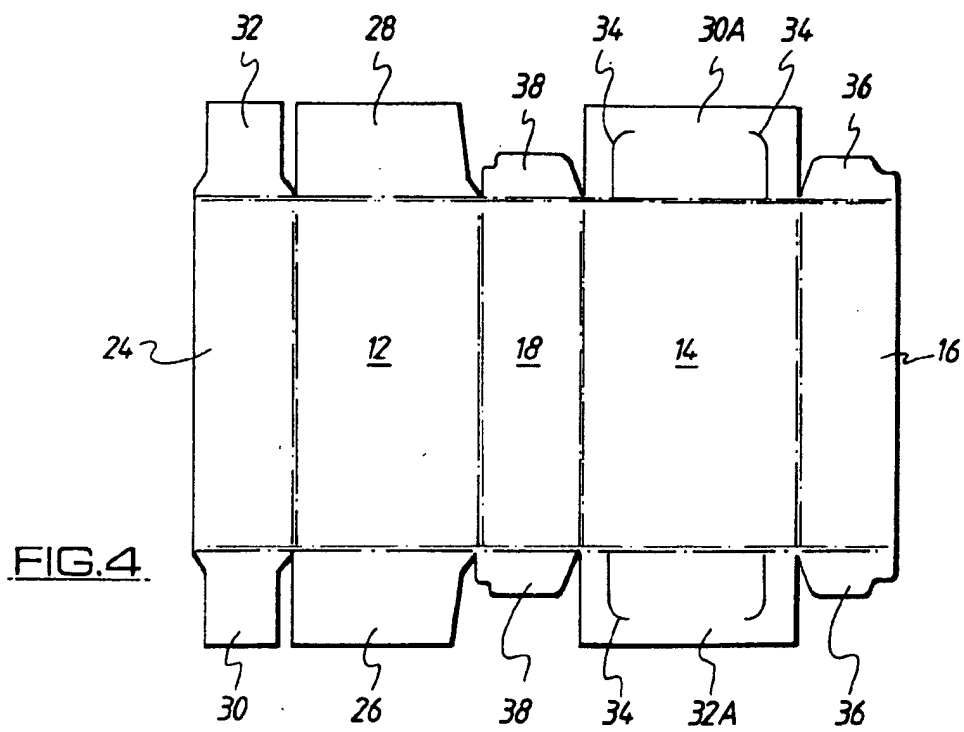
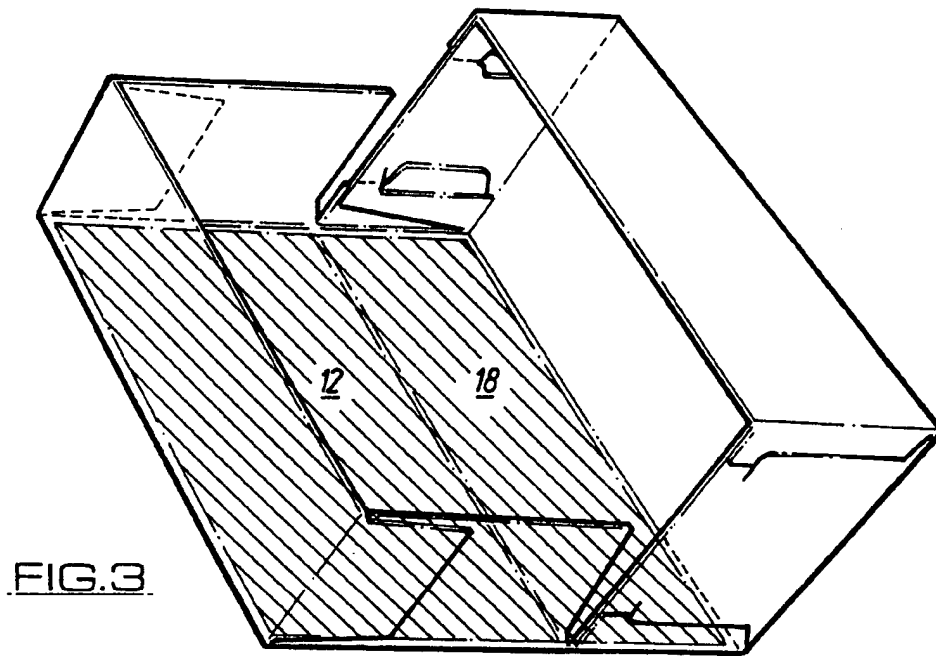
7. Récipient suivant l'une des revendications précédentes, caractérisé en ce que la surface de base développée comprend un panneau de côté (18) qui forme un côté dans le récipient fermé et qui, avec le couvercle (12) du récipient, forme ladite surface de base développée.

8. Récipient suivant la revendication 7, caractérisé en ce que le récipient est ouvert vers le haut de façon que le couvercle et la première surface de base soient dans un même plan.

9. Récipient suivant la revendication 8, caractérisé en ce que la paroi de côté est continue, tout autour du récipient (10), dans la position ouverte.

10. Récipient suivant l'une des revendications 1 à 5, caractérisé en ce que le récipient a la forme d'une boîte en deux parties emboîtables (102, 104) qui sont très rapprochées en position fermée et sont tirées et écartées à l'état ouvert avec base développée.





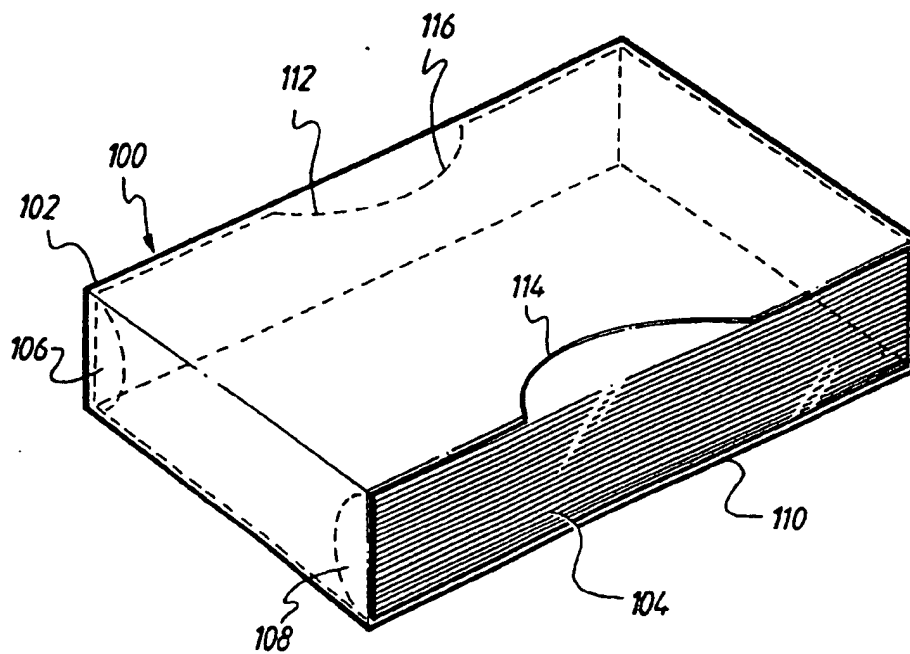


FIG. 5

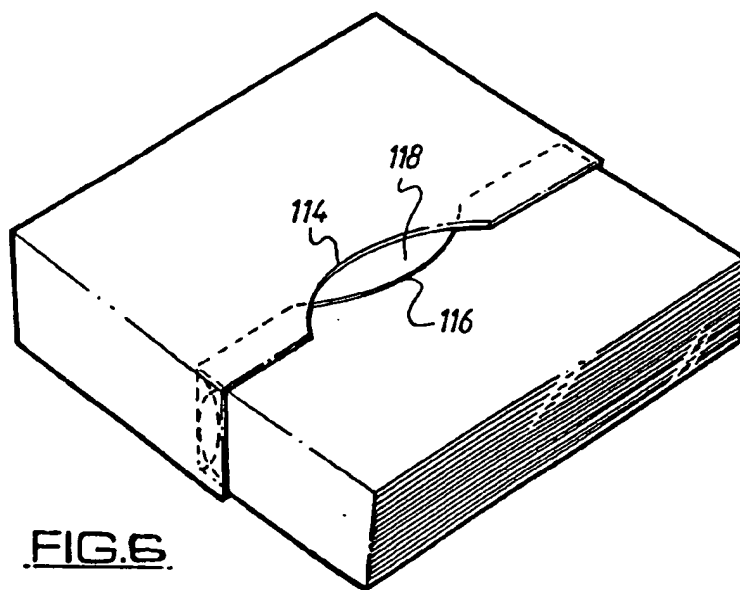


FIG. 6